

U.S. Patent Application No. 10/621,096
Amendment dated March 13, 2006
Reply to Office Action of December 12, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A monolithic sputtering target assembly comprising a one piece assembly made from the same metal, wherein said one piece assembly comprises a sputtering target blank portion, and a backing plate portion, ~~and a heat sink configuration on an underneath side of said monolithic sputtering target assembly~~, wherein said sputtering target blank portion is at least partially recrystallized and wherein at least a portion of said backing plate portion is not recrystallized.
2. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal comprises tantalum.
3. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal comprises niobium.
4. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal comprises cobalt.
5. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal comprises titanium.
6. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal comprises a valve metal.
7. (Canceled)
8. (Currently amended) A monolithic sputtering target assembly comprising a one piece assembly made from the same metal, wherein said one piece assembly comprises a

U.S. Patent Application No. 10/621,096
Amendment dated March 13, 2006
Reply to Office Action of December 12, 2005

sputtering target blank portion, and a backing plate portion, and a heat sink configuration on an underneath side of said monolithic sputtering target assembly, wherein said backing plate portion comprises a flange portion that has a higher yield strength and/or is more rigid than said sputtering target blank portion.

9. (Previously presented) The monolithic sputtering target assembly of claim 8, wherein said sputtering target blank portion is at least partially recrystallized.

10. (Previously presented) The monolithic sputtering target assembly of claim 8, wherein said at least a portion of said backing plate portion is not recrystallized.

11. (Previously presented) The monolithic sputtering target assembly of claim 16, wherein said flange portion has a higher yield strength and/or is more rigid than said sputtering target blank portion.

12. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has a purity of from about 99.5% or greater.

13. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has an average grain size of about 300 microns or less.

14. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has an average grain size of 100 microns or less.

15. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has an average grain size of about 25 microns or less.

16. (Currently amended) A monolithic sputtering target assembly comprising a one piece assembly made from the same metal, wherein said one piece assembly comprises a sputtering target blank portion, and a backing plate portion, and a heat sink configuration on an underneath side of said monolithic sputtering target assembly, wherein said metal has a texture of

U.S. Patent Application No. 10/621,096
Amendment dated March 13, 2006
Reply to Office Action of December 12, 2005

(111) on the surface or throughout said metal, or wherein said metal has a texture of (100) on the surface or throughout said metal or wherein said metal has a primary or mixed (111) texture throughout said metal.

17. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has a texture of (100) on the surface or throughout said metal.

18. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal has a primary or mixed (111) texture throughout said metal.

19. (Currently amended) A sputtering target assembly comprising a backing plate, and a sputtering target blank, and a heat sink configuration on an underneath side of said sputtering target assembly, wherein said backing plate and the sputtering target blank comprise the same metal and wherein said same metal is a valve metal, cobalt, titanium, or alloys thereof.

20. (Canceled)

21. (Original) The sputtering target assembly of claim 19, wherein said sputtering target blank and said backing plate are tantalum.

22. (Original) The sputtering target assembly of claim 19, wherein said sputtering target blank and said backing plate are niobium.

23. (Original) The sputtering target assembly of claim 19, wherein said sputtering target blank and said backing plate are titanium.

24. (Original) The sputtering target assembly of claim 19, wherein said sputtering target blank and said backing plate are cobalt.

25. (Original) A method of recycling a sputtering target comprising providing a monolithic sputtering target assembly of claim 1;

sputtering said monolithic sputtering target assembly to form a spent monolithic

U.S. Patent Application No. 10/621,096
Amendment dated March 13, 2006
Reply to Office Action of December 12, 2005

sputtering target assembly; and

recycling said monolithic sputtering target assembly.

26. (Original) The method of claim 25, wherein recycling comprises melting down said spent monolithic sputtering target assembly.

27. (Original) The method of claim 25, wherein said recycling involves filling in any cavities present in said spent monolithic sputtering target assembly.

28. (Original) The method of claim 25, recycling comprises redepositing metal on said spent monolithic sputtering target assembly to form a new monolithic sputtering target assembly.

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Original) A method of recycling a sputtering target comprising providing a sputtering target assembly of claim 19;

sputtering said sputtering target assembly to form a spent sputtering target assembly; and recycling said sputtering target assembly.

33. (Canceled)

34. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal is consolidated powder metal.

35. (Original) The monolithic sputtering target assembly of claim 1, wherein said metal is an ingot derived metal.

36. (Original) The monolithic sputtering assembly of claim 1, wherein a portion of said sputtering target comprises a consolidated powder metal and another portion of said

U.S. Patent Application No. 10/621,096
Amendment dated March 13, 2006
Reply to Office Action of December 12, 2005

sputtering target assembly comprises ingot derived metal.

37. (Currently amended) A monolithic sputtering target assembly comprising a one piece assembly made from the same metal and having a heat sink configuration on an underneath side of said monolithic sputtering target assembly, wherein said metal has a primary or mixed (111) texture and a minimum (100) texture on the surface or throughout the thickness of the sputtering target assembly, and is substantially void of (100) textural bands.

38. (Currently amended) A monolithic sputtering target assembly comprising a one piece assembly made from the same metal and having a heat sink configuration on an underneath side of said monolithic sputtering target assembly, wherein said metal has a primary or mixed (100) texture and a minimum (111) texture on the surface or throughout the thickness of the sputtering target assembly, and is substantially void of (111) textural bands.

39. (Previously presented) A method of recycling a sputtering target of claim 25, wherein the method comprises flame spraying or Osprey processes.

40. (Previously presented) The monolithic sputtering target assembly of claim 37, wherein said metal comprises tantalum.

41. (Previously presented) The monolithic sputtering target assembly of claim 37, wherein said metal comprises niobium.

42. (Previously presented) The monolithic sputtering target assembly of claim 38, wherein said metal comprises tantalum.

43. (Previously presented) The monolithic sputtering target assembly of claim 38, wherein said metal comprises niobium.